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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/444,460	11/22/1999	HIDEAKI FUJITA	1248-0472P-S	8686

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EXAMINER

KNAUSS, SCOTT A

ART UNIT PAPER NUMBER

2874

DATE MAILED: 08/28/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/444,460

Applicant(s)

FUJITA ET AL.

Examiner

Scott A Knauss

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 March 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,5,7,9,11,13,15,17,19-32 and 37-57 is/are pending in the application.

4a) Of the above claim(s) 19-32 and 37-40 is/are withdrawn from consideration.

- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,5,7,9,11,13,15,17 and 41-57 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Amendment

1. The amendment filed 7/24/02 has been entered and carefully considered by the examiner. However, the changes to the claims are not persuasive in light of the remarks below. Therefore the rejection is made final.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1,3,7,9,11,47-51, and 57 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,497,445 to Imoto.

Regarding claims 1,9,41-48, and 50 Imoto discloses in fig. 6g an optical waveguide with all the limitations set forth in the claims, including a substrate made of silicon (column 5, lines 27-30), a buffer layer (#6) over the substrate, a core section (#3) made of polyimide (column 7, lines 44-47), and a clad section (#10) covering an upper surface of the core section made of an inorganic dielectric (silicon oxide compound – column 7, lines 19-21), being of substantially the same (rectangular) shape as the core section and having a lower refractive index than that of the core section (see abstract, column 7, lines 21-24).

4. Regarding claims 17,41-46,53 and 57 applicant is claiming the product including the process of making an optical waveguide, and therefore are of “product-by-process”

nature. The courts have been holding for quite some time that: the determination of the patentability of product-process claim is based on the product itself rather than on the process by which the product is made. In *re Thrope*, 777 F. 2d 695, 227 USPQ 964 (Fed. Cir. 1985); and patentability of a claim to a product does not rest merely on a difference in the method by which that product is made. Rather, it is the product itself which must be new and unobvious. Applicant has chosen to claim the invention in the product form. Thus, a prior art product which possesses the claimed product characteristics can anticipate or render obvious the claimed subject matter regardless of the manner in which it is fabricated. A rejection based on 35 U.S.C. section 102 or alternatively on 35 U.S.C. section 103 of the status is eminently fair and acceptable. In *re Brown and Saffer*, 173 USPQ 685 and 688; In *re Pilkington*, 162 USPQ 147.

As such, no weight is given to the process steps recited in claims 17, 41-46, 53 and 57. The claimed process of making limitations can be used to make the optical waveguide disclosed by Imoto.

Regarding claim 3, Imoto discloses a clad section (#10) which serves as a mask when processing the core section (see column 7, lines 19-21, 32-36).

Regarding claim 7, Imoto fails to explicitly state the use of silicon oxide as a clad layer. Imoto does, however disclose the use of an inorganic layer comprising $\text{SiO}_x\text{N}_y\text{H}_z$, a compound comprising silicon oxide.

Regarding claims 49 and 51, Imoto fails to explicitly state the use of silicon oxide as a buffer layer. Imoto does, however disclose the use of an inorganic layer comprising $\text{SiO}_x\text{N}_y\text{H}_z$, a compound comprising silicon oxide.

Regarding claim 11, Imoto since does not specify the use of silane, the examiner assumes that the polyimide used is a polyimide containing no silane.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 55 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imoto.

Regarding claims 55 and 56, Imoto discloses the use of clad layer (#10) having substantially the same shape as the core of a waveguide. Imoto does not, however, specify the thickness of the layer, in particular a thickness of several microns or 2 microns. Nevertheless, it would have been an obvious matter of design choice to use such thicknesses, since such a modification would have involved a mere change in the

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size of a component. A change of size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955).

8. Claims 52-54 rejected under 35 U.S.C. 103(a) as being unpatentable over Imoto in view of U.S. Patent No. 6,112,002 to Tabuchi.

Regarding claims 52-54 Imoto discloses an optical waveguide with all the limitations set forth in claim 52 as stated above regarding claims 1,3 and 47, including a buffer layer, organic core, and an inorganic clad serving as a mask and being of substantially the same (rectangular) shape as the core section but does not disclose an optical element and a waveguide formed on a single substrate.

Nevertheless, such a configuration is well known in the art. Tabuchi, in particular discloses in fig. 10 a waveguide (#300) and optical element (#200) placed on a common substrate (#100) for the purpose of efficiently coupling light between the optical waveguide and optical element.

Therefore it would have been obvious to one of ordinary skill in the art to place the optical waveguide of Imoto on a common substrate with an optical element for the purpose of efficiently coupling light between the element and the waveguide.

9. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Imoto in view of U.S. Patent No. 5,235,663 to Thomas.

Imoto discloses an organic waveguide with all the limitations set forth in the claim 1, but fails to specify surrounding a core and clad section with a light shielding film

Thomas, on the other hand, discloses surrounding a core and clad layer with an opaque jacket comprising a metal film (see column 5, lines 37-42). Such a jacket would

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be desirable for the purpose of blocking external light from entering the core of a waveguide.

Therefore it would have been obvious to one of ordinary skill in the art to modify the organic waveguide of Imoto by surrounding the core and clad with a light shielding film as taught by Thomas for the purpose of blocking external light from entering the core of an optical waveguide.

10. Claims 13,15, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imoto in view of U.S. Patent No. 5,572,619 to Maruo et al.

Regarding claim 13, Imoto discloses an optical waveguide with all the limitations set forth in the claims, including a polyimide core, but does not disclose a core using fluorinated polyimide.

Maruo, on the other hand, discloses an optical waveguide very similar to the waveguide taught by Imoto in figure 1, using a core layer of fluorinated polyimide (column 1, lines 53-67) for the purpose of providing a controllable refractive index and a core with excellent transparency.

Therefore it would have been obvious to one of ordinary skill in the art to replace the organic core taught by Yamamoto with the polyimide core taught by Maruo to provide a waveguide with a controllable refractive index core with excellent transparency.

Regarding claims 15 and 17 Imoto fails to disclose the use of an adhesive layer between a core and clad section.

Maruo, on the other hand, discloses the use of adhesive layers for the purpose of providing adhesion between core and cladding layers (see column 8, lines 37-42)

Therefore it would have been obvious to one of ordinary skill in the art to modify the optical waveguide of Imoto to use adhesive layers as taught by Maruo for the purpose of adhering a clad layer to a core layer.

Remarks

11. The applicant has traversed the examiner's original rejection of the claims starting from page 6 by stating that Imoto fails to disclose a "clad section having substantially the same shape as the core section" in figure 5. However, the examiner's rejection was drawn to the embodiment shown in figure 6, which shows a waveguide quite different from figure 5, and has, particularly in fig. 6(g) a cladding (#10) having substantially the same shape as a core (#3) section. Furthermore, it is unclear what exactly "substantially the same shape" comprises, and since the clad and core sections are both rectangular, they could be interpreted as having "substantially the same shape".

Regarding claims 13,15 and 17, the applicant has traversed the examiner's rejection by stating that "Maruo fails to teach how to promote adhesion between the polyimide and the inorganic dielectric" (page 9, paragraph 3). Nevertheless, the teachings of Maruo are merely used to show that an adhesive can be used to attach core and cladding layers, which would be applicable in any type of waveguide having such a structure where increased adhesion is needed.

Conclusion

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott A Knauss whose telephone number is (703) 305-5043. The examiner can normally be reached on 9-6 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (703) 308 - 4819. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0530.

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Scott Knauss

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August 14, 2002



HEMANG SANGHAVI